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Progress in the Early Identification of Breast Cancer, Rhode Island, 1987-1998

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Identifying female breast cancer at early stages of disease is an essential goal of cancer control. Breast cancer is curable much of the time if diagnosed in the earliest stages of disease and treated promptly. Screening for breast cancer with clinical breast examination (CBE) and mammography is effective in identifying breast cancer at early stages of disease, and may reduce breast cancer mortality in a population thus screened.[1] Accordingly, the State of Rhode Island has officially adopted the guidelines for breast cancer screening presented in Table 1,[2] and, in collaboration with the federal government, has sponsored statewide breast cancer screening programs since 1987.

Methods. The Rhode Island Cancer Registry (RICR), based at the Rhode Island Department of Health and operated collaboratively with the Hospital Association of Rhode Island, monitors the stage distribution of female breast cancers, assessing trends and differentials. Stage of disease at diagnosis (summary stage) is a data element required in all reports of newly diagnosed breast cancer made to the RICR.

All cases of breast cancer reported to the RICR for Rhode Island residents diagnosed 1987-1998 were selected for study. Years of diagnosis and ages at diagnosis were grouped to facilitate analysis. Census tracts of residence were grouped according to indicators of socioeconomic status (SES) from the 1990 U.S. Census of Population, creating four ordinal categories of SES (poverty, low, middle, and high). This measure is "ecological" in the sense that it describes the population of a geographic area, not the particular person to which it is assigned in the present analysis, serving as a rough proxy for individual SES. Information on race is presented for whites and African Americans only, because the numbers of cases attributable to women of other races are very small.

Results. The distribution by stage of newly diagnosed breast cancers in Rhode Island is very similar to the distribution in areas surveyed by the Surveillance, Epidemiology, and End Results (SEER) program of the National Cancer Institute. (Figure 1) [Note that SEER omits *in situ* cases from the calculation of percentages by stage.][3]

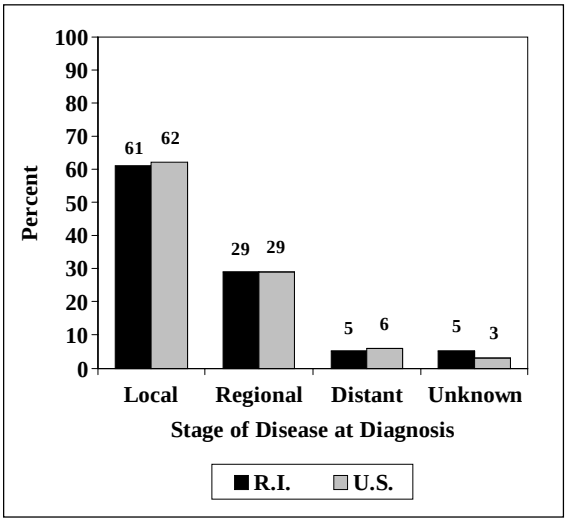

Figure 1. Invasive female breast cancers by stage of disease at diagnosis, Rhode Island and the United States, 1989-1995

Table 1. RI Breast cancer screening recommendations.[2]

- For women without a family history of pre-menopausal breast cancer, clinical breast examination (CBE) should be performed at the periodic health examination after the age of 30.
- Annual CBE and mammography after age 40.
- For women with a first degree relative diagnosed with pre-menopausal breast cancer, annual mammography should commence 5-10 years prior to the age at which the relative was diagnosed.
- Women with BRCA1 and BRCA2 mutations should commence monthly breast self-examination by 20 years of age, and should receive annual or semiannual CBE, and annual mammography, beginning at age 25 to 35 years.

Mammography has increased the proportion of tumors found *in situ* in Rhode Island, from 9% in 1987-1990 to 12% in 1991-1994 to 15% in 1995-1998. The CBE is not considered to be sensitive enough to detect tumors this small, although some *in situ* tumors may be found serendipitously by mammography after a CBE has detected other suspicious lumps.

Socioeconomic differentials in early detection are small and getting smaller. The goal of breast cancer screening is to identify all tumors before they have spread regionally, because five-year survival is

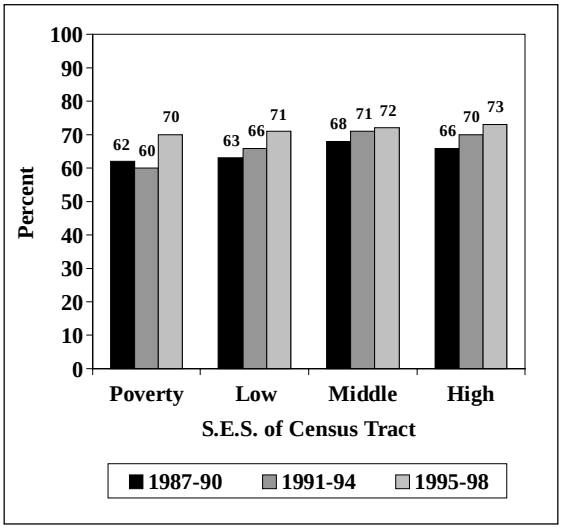

Figure 2. Percentage of female breast cancers staged in situ *or localized, by socioeconomic status of census tract of residence and by year of diagnosis, Rhode Island*

substantially higher for *in situ* and localized tumors than for tumors which have spread regionally or metastatically. The percentage of early-stage tumors increased statewide from 65% in 1987-1990 to 68% in 1991-1994 to 72% in 1995-1998. (Figure 2) Women residing in census tracts of all SES levels benefited, although small differentials favoring women residing in higher SES areas persisted throughout the 12 years of observation.

Race differentials are dramatic for the period of observation as a whole. (Figure 3) The percentages of breast cancers detected at early stages of disease (*in situ* and localized) are much higher for whites than African Americans. This gap has lessened over time, however.

Discussion. To evaluate the overall effectiveness of breast cancer screening efforts in Rhode Island, the RICR routinely monitors reports of female breast cancers, focusing on the distribution of stage of disease at diagnosis over time and across demographic groups. Since 1987, the percentages of tumors found *in situ* and localized have increased. Women have benefited across SES and racial groups, and racial differentials have diminished. Systematic breast cancer screening has helped all Rhode Island women. We must continue this work, focusing on those groups of women who are at higher risk of being diagnosed with breast cancer at more advanced stages of disease.

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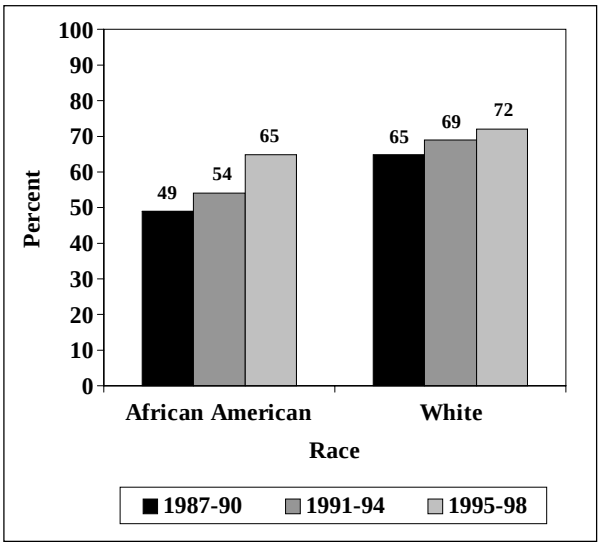

Figure 3. Percentage of female breast cancers staged in situ *or localized, by race and by year of diagnosis, Rhode Island*

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